

2. AMENDMENT/MODIFICATION NO. 0505 3. EFFECTIVE DATE See Block 16C 4. REQUISITION/PURCHASE REQ. NO. 5. PROJECT NO. (if applicable)

6. ISSUED BY CODE 893040 7. ADMINISTERED BY (If other than Item 6) CODE 00603
 Office of River Protection U.S. Department of Energy Office of River Protection P.O. Box 450 Richland WA 99352
 Office of River Protection U.S. Department of Energy Office of River Protection P.O. Box 450 MS: H6-60 Richland WA 99352

8. NAME AND ADDRESS OF CONTRACTOR (No., street, county, State and ZIP Code)
 WASHINGTON RIVER PROTECTION SOLUTIONS LLC
 Attn: Keven Mabe
 Washington River Protection Solutions LLC
 2425 Stevens Center Pl
 Richland WA 99354-1874
 CODE 806500521 FACILITY CODE
 9A. AMENDMENT OF SOLICITATION NO. (x)
 9B. DATED (SEE ITEM 11)
 10A. MODIFICATION OF CONTRACT/ORDER NO. x DE-AC27-08RV14800
 10B. DATED (SEE ITEM 13) 05/29/2008

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS
 The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers is extended. is not extended.
 Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods: (a) By completing items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGEMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA (if required)

13. THIS ITEM ONLY APPLIES TO MODIFICATION OF CONTRACTS/ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

CHECK ONE
 A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
 B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).
 X C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF FAR 52.243-2 Change-Cost Reimbursement (Aug 1987)
 D. OTHER (Specify type of modification and authority)

E. IMPORTANT: Contractor is not is required to sign this document and return 1 copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)
 The purpose of this modification is to extend the contract for one year to end September 30, 2019 and update contract sections accordingly. See continuation pages for further details.

FOB: Destination
 Period of Performance: 06/20/2008 to 09/30/2019

Except as provided herein, all terms and conditions of the document referenced in Item 9 A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER (Type or print) 15B. CONTRACTOR/OFFEROR 15C. DATE SIGNED 16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print) 16B. UNITED STATES OF AMERICA 16C. DATE SIGNED
 Katie Downing Contracting U.S. 15C. 9/28/18 16A. Wade E. Hader 16B. 16C. 28 SEP 2018
 (Signature of person authorized to sign) (Signature of Contracting Officer)

Purpose of Modification:

The purpose of this supplemental agreement is to make the following changes:

1. Exercise the one-year contract extension under the authority of contract clause I.26, FAR 52.217-9 Option to Extend the Term of the Contract (MAR 2000). The contract period of performance end date is hereby changed from September 30, 2018 to September 30, 2019.
2. Definitize cost and fee for Tank Operation Contract (TOC) Extension - Fiscal Year (FY) 2019 Work Scope (WRPS-1801588 R1, dated May 31, 2018 and WRPS-1801588 R2, dated June 25, 2018) in accordance with FAR 52.243-2, Changes-Cost Reimbursement (AUG 1987).

2.1 Update Section B as follows:

2.1.1 Add previously negotiated costs and fee for FY 2019 from the following change proposals which were definitized outside of the TOC Extension change proposal and captured in Contract Section J, Attachment 17, *Post Fiscal Year 2018 Cost and Fee Table*:

- Modification 484 – Definitization of WRPS change proposal for CP-17-006, Package Specific Safety Document (PSSD) for the Immobilized Low-Activity Waste (ILAW) Container.
- Modification 500 – Deletion of Unfunded Work Scope.
- Modification 502 – Definitization of WRPS change proposals for CP-18-001, Tank Side Cesium Removal (TSCR) Capability and CP-18-013, Low-Activity Waste (LAW) Transporter Testing; plus, correction of error in the B.4-1 table from modification 500.

The cost and fee associated with the scope from previously negotiated changes to be added into the B.4-1 Table results in the increase of costs for FY 2019 in the amount of \$44,902,176 and fee in the amount of \$2,955,280, for a total of \$47,857,456 as shown in the table below:

Modification	Cost	Fee	Total Added Cost & Fee
Modification 484, PSSD for ILAW Container	\$ 120,000	\$ 1,168	\$ 121,168
Modification 500, Deletion of Unfunded Work Scope	\$ 38,713,481	\$ 2,190,630	\$ 40,904,111
Modification 502, Correction to Deletion of Unfunded Work Scope	\$ (7,278,299)	\$ (308,405)	\$ (7,586,704)
Modification 502, TSCR FY2019 Portion	\$ 13,346,994	\$ 1,071,887	\$ 14,418,881
Totals	\$ 44,902,176	\$ 2,955,280	\$ 47,857,456

2.1.2 Incorporate negotiated costs for TOC Extension - FY 2019 work scope, (WRPS-1801588 R1, dated May 31, 2018 and WRPS-1801588 R2, dated June 25, 2018) in the amount of \$588,520,189.48 plus fee in the amount of \$41,017,649 as shown in the table below by SubCLIN:

FY19-20 Extention Proposal (CP-18-018)	FY2019
SubCLIN 1.2.1 - Safe, Compliant Operations	281,130,111.80
SubCLIN 1.2.2 - Base Operations Indirect Costs (G&A Only)	75,469,723.54
SubCLIN 1.3 - Analytical Laboratory Support	35,699,181.01
SubCLIN 2.1 - Single Shell Tank Retrieval	93,921,784.76
SubCLIN 2.2 - SST Farm (Waste Management Area) Closure	4,378,577.09
SubCLIN 3.1 - Treatment Planning, WFD and WTP Transition	33,863,099.97
SubCLIN 3.2 - WTP Operational Readiness	2,581,780.92
SubCLIN 3.3 - Immobilized High-Level Waste (IHLW) Storage & Shipping Facility Construction	6,242,079.44
SubCLIN 3.4 - Upgrade/Operate Effluent Treatment Facility	22,425,094.05
SubCLIN 6.1 - Hanford Employee Retirement & Benefit Plan Management	32,808,756.90
Subtotal Cost	588,520,189.48
Fee increase (pool)	41,017,649.00
Total Increase Cost plus Fee - Option Period 3	629,537,838.48

2.1.3 Add back costs for CLIN 6.2-Pension and Welfare Plans in the amount of \$44,500,000 for FY 2019 as shown in the table below:

	FY 2019	Total Costs TOC Extension FY 2019	Fee (Pool) TOC Extension FY 2019	Total Cost and Fee TOC Extension FY 2019
Added Cost from CLIN 6.2 Pension and Welfare Plans Per Section 2.1.2 above	\$44,500,000	\$44,500,000	\$44,500,000	\$44,500,000

2.1.4 The net change in costs as a result of the TOC Extension is an increase of \$677,922,365. The net change in fee as a result of this modification is an increase of \$43,972,929, for a total net change in contract value of \$721,895,294.

2.1.5 As a result of this modification, the contract value is changed from \$6,066,363,358 to \$6,788,258,654. The costs and fee are incorporated in the B.4-1 Table by sub-CLIN and Fiscal Year.

3. Update Contract Section B.3(a), *Obligation and Availability of Funds*, to revise the end date from September 30, 2018 to September 30, 2019 as a result of this modification.

FROM:

- (a) Obligation of Funds. Pursuant to the Section I Clause entitled, FAR 52.232-22 Limitation of Funds, total funds in the amount of \$5,920,396,361.62 have been allotted for obligation and are available for payment of services provided from the effective date of the Notice to Proceed through September 30, 2018.

Of the total identified above, \$323,855,000.00 in Recovery Act funds have been allotted for obligation and are available for payment of services provided from the effective date of this modification through September 30, 2011. (Subject to Section I clause 52.216-24 Limitation of Government Liability) and \$5,596,541,361.62 in non-Recovery Act funds are available for payment of services through September 30, 2018.

TO:

- (a) Obligation of Funds. Pursuant to the Section I Clause entitled, FAR 52.232-22 Limitation of Funds, total funds in the amount of \$5,920,396,361.62 have been allotted for obligation and are available for payment of services provided from the effective date of the Notice to Proceed through September 30, 2019.

Of the total identified above, \$323,855,000.00 in Recovery Act funds have been allotted for obligation and are available for payment of services provided from the effective date of this modification through September 30, 2011. (Subject to Section I clause 52.216-24 Limitation of Government Liability) and \$5,596,541,361.62 in non-Recovery Act funds are available for payment of services through September 30, 2019.

4. Update Contract Section C.2.1.3, *Sub-CLIN 1.3: Analytical Laboratory Support*, to revise the through date in the background from “2018” to “FY 2019.” The change is as follows:

FROM:

“The 222-S Laboratory Complex in the 200 West Area of the Hanford Site is the primary Hanford Site laboratory for analysis of highly radioactive samples. The Laboratory Analysis & Testing Services (LA&TS), under contract to DOE-ORP through 2018...”

TO:

“The 222-S Laboratory Complex in the 200 West Area of the Hanford Site is the primary Hanford Site laboratory for analysis of highly radioactive samples. The Laboratory Analysis & Testing Services (LA&TS), under contract to DOE-ORP through FY 2019...”

5. Attached to this modification are:

- Attachment 1 – Replacement pages for:
 - i. Section B, *Supplies or Services and Prices/Costs*, pages B-3, B-4, and B-10
 - ii. Section C.2.1.3, *Sub-CLIN 1.3: Analytical Laboratory Support*, page C-16
 - iii. Section J, Attachment 17, *Post Fiscal Year 2019 Cost and Fee Table*, page J.17-1
- Attachment 2 – Agreed to Cost Table
- Attachment 3 – TOC Risk Register FY 2019

6. FAR 43.204(c)(2) - Contractor’s Statement of Release –

In consideration of the modification agreed to herein as complete equitable adjustments for Contractor’s incorporation of the FY2019 portion of the submitted *Phase 1 – Fiscal Year 2019/2020 Plan in Support of the Lifecycle Baseline Update* (WRPS-1801588 R1), dated May 31, 2018, and *Option Period 3 – FY2019/2020 Proposal, CP-18-018* (WRPS-1801588 R2), dated June 25, 2018, “proposal for adjustment,” and as updated in Attachment 2, *Agreed to Cost Table*, Attachment 3, *Risk Register*, and the update to the WBS Dictionaries and Schedule that are necessary for definitization of negotiations that will be captured in the follow-on proposal definitization baseline change request, the Contractor hereby releases the Government from any and all liability under this contract for further equitable adjustments attributed to such facts or circumstances giving rise to the “proposal for adjustment” except for the exclusions identified in Contractor proposal, *Option Period 3 – FY2019/2020 Proposal, CP-18-018* (WRPS-1801588 R2) and the items listed below, all of which will be subject to determination of entitlement at the time of submittal pursuant to Federal Acquisition Regulation (FAR) 52.243-2, *Changes Cost-Reimbursement* (Aug 1987):

- Changes to current Federal, State, and local laws and regulations (including DOE regulations) which, if required to be implemented by the Contractor, modify the scope contained in this contract modification.
- Changes from the present operational requirements for performing work within and around the TOC, resulting from the lawsuit *Hanford Challenge, et al. v Moniz, et al.*, Case No. 4:15-CV-05086-TOR, and the resulting September 19, 2018, Settlement Agreement.
- PB-1 and PB-2 pump replacements.
- Implementation impacts to work scope execution in moving from self-contained breathing apparatus to air purifying respirators/powered air (“full face”) purifying respirators.

As part of the agreements made in these contract negotiations, an update will occur to the *FY 2019 Performance Evaluation and Measurement Plan* after the receipt of contract modification 498 to reflect the following agreement:

- An update to the performance based incentive/award fee split from 60%/40% to 70%/30%.
- Where a terminal milestone has not been completed by the identified target date but the contractor can demonstrate substantial progress with demonstrable benefit to DOE (e.g., waste volume reduction or waste processed), the Contractor may submit, and the Contracting Officer will consider, a request for partial payment. Such a request must include the description of the benefit of partial completion to Department objectives, information on unique circumstances impacting performance, and the proposed basis for payment. The Contracting Officer reserves the unilateral right to make a subjective determination on partial payment eligibility and value, including non-payment, in these situations.

7. All other Terms and Conditions remain unchanged.

ATTACHMENT 1
Replacement Pages

Total: 5 pages including this cover page

- Section B, *Supplies or Services and Prices/Costs*, pages B-3 and B-4
- Section C.2.1.3, *Sub-CLIN 1.3: Analytical Laboratory Support*, page C-16
- Section J, Attachment 17, *Fiscal Year 2020 Cost and Fee Table*, page J.17-1

- b. Sub-CLIN 4.2: Extended Demonstration Bulk Vitrification System Operations;
 - c. Sub-CLIN 4.3: Supplemental Treatment Design
 - d. Sub-CLIN 4.4: Supplemental Treatment Construction and Operations
 - e. Sub-CLIN 4.5: Transuranic Tank Waste Treatment and Packaging.
- (5) *CLIN 5 – Early Feed and Operation of the WTP Low Activity Waste (LAW) Facility:*
- a. Sub-CLIN 5.1: Tank Selection, Retrieval, Pretreatment and Feed Delivery Design;
 - b. Sub-CLIN 5.2: Retrieval, Pretreatment and Feed Delivery Construction and Operations;
 - c. Sub-CLIN 5.3: (moved to Sub-CLIN 3.4)
 - d. Sub-CLIN 5.4: LAW/BOF/LAB Operations.
- (6) *CLIN 6 – Pension and Welfare Plans:*
- a. Sub-CLIN 6.1: Hanford Employee Retirement and Benefit Plan Management; and
 - b. Sub-CLIN 6.2: Legacy Pension and Benefit Plan Management.
- (7) *CLIN 7 – American Recovery and Reinvestment Act (ARRA) Workslope:*
- a. Sub-CLIN 7.1: ARRA workslope under Sub-CLIN 1.2 – Safe, Compliant Operations;
 - b. Sub-CLIN 7.2: ARRA workslope under Sub-CLIN 1.3 – Analytical Laboratory Support;
 - c. Sub-CLIN 7.3: ARRA workslope under Sub-CLIN 3.1 – Treatment Planning, Waste Feed Delivery, and WTP Transition; and
 - d. Sub-CLIN 7.4: ARRA workslope under Sub-CLIN 3.3 – Immobilized High-Level Waste (IHLW) Storage and Shipping Facility Construction
 - e. Sub-CLIN 7.5: ARRA workslope under Sub-CLIN 3.4 - Upgrade and Operate the Effluent Treatment Facility (ETF).
 - f. Sub-CLIN 7.6: ARRA workslope under Sub-CLIN 2.1 Single Shell Tank (SST) Retrieval and Closure
- (8) *CLIN 8 – Contract Closeout*
- m. Sub-CLIN 8.1: Contract Closeout Workslope

B.3 OBLIGATION AND AVAILABILITY OF FUNDS

- (a) Obligation of Funds. Pursuant to the Section I Clause entitled, FAR 52.232-22 Limitation of Funds, total funds in the amount of \$5,920,396,361.62 have been allotted for obligation and are available for payment of services provided from the effective date of the Notice to Proceed through September 30, 2019.

Of the total identified above, \$323,855,000.00 in Recovery Act funds have been allotted for obligation and are available for payment of services provided from the effective date of this modification through September 30, 2011. (Subject to Section I clause 52.216-24 Limitation of Government Liability) and \$5,596,541,361.62 in non-Recovery Act funds are available for payment of services through September 30, 2019.

- (b) Availability of Funds. Except as may be specifically provided in the Section I Clause entitled, *DEAR 952.250-70, Nuclear Hazards Indemnity Agreement*, the duties and obligations of DOE hereunder calling for the expenditure of appropriated funds shall be subject to the availability of funds appropriated by the U.S. Congress that DOE may legally spend for such purposes.
- (c) No fee shall be paid to the contractor for the Recovery Act work, including provisional, prior to the negotiation of any equitable adjustment in the fee and the subsequent modification of the contract to reflect the mutual agreement between the contractor and the Contracting Officer.

B.4 CONTRACT COST AND CONTRACT FEE

This Section establishes the *Total Contract Cost* and *Contract Fee*. Within Table B.4-1:

- (a) *Contract Period* is defined as the *Transition Period, Base Period, and Option Period(s)* (if exercised) described in the Section F Clause entitled, *Period of Performance*.
- (b) *Contract Cost* is defined as all costs initially proposed by the Contractor.
- (c) *Available Fee* is defined as the maximum amount of fee that may be earned under the Contract by Contract period.
- (d) *Contract Price* in Table B.4-1 is the sum of *Contract Cost* and *Available Fee*, in each year of Contract performance.
- (e) *Total Contract Cost* is defined as the cumulative *Contract Cost* for all Contract periods.
- (f) *Total Available Fee* is defined as the cumulative *Available Fee* for all Contract periods.
- (g) *Total Contract Price* is defined as the sum of *Total Contract Cost* and *Total Available Fee*.
- (h) *Contract Line Item Number (CLIN)* references a specific category of work as defined in the Section C, *Statement of Work*. Proposed costs shall be appropriately categorized into the individual CLINs in Table B.4-1.
- (i) *Contract Cost, Contract Price, and Available Fee* by Fiscal Year and by Sub-CLIN will be adjusted by the Contracting Officer whenever changes affecting the table are made under the Section I Clause entitled, *Changes – Cost Reimbursement*.

In cooperation with other Hanford Site contractors, the Contractor shall establish interface management processes to assure effective control of technical, administrative, and regulatory interfaces as further described in Section C.3.5, *Interface Management*. Development and compliance with interface control documents (ICDs) between the Contractor and the WTP contractor are described separately in Section C.2.3.1.

C.2.1.3 Sub-CLIN 1.3: Analytical Laboratory Support

Background:

The 222-S Laboratory Complex in the 200 West Area of the Hanford Site is the primary Hanford Site laboratory for analysis of highly radioactive samples. The Laboratory Analysis & Testing Services (LA&TS), under contract to DOE-ORP through FY2019, performs analytical services; however, the TOC shall operate and maintain the laboratory facility. The laboratory is a Hazard Category 3 nuclear facility and contains hot cells and equipment to perform analysis of solid, liquid and gaseous samples. The (LA&TS) maintains its own ISMS, Quality Assurance Plan, and Assurance System Description, but relies on the TOC for nuclear safety, radiation protection, and any other facility-related support. The (LA&TS) is required to annually perform approximately 25,000 inorganic, organic, and radionuclide analyses. The (LA&TS) will perform these analyses on approximately 3,000 intermediate to high level radioactive and/or hazardous waste samples received from multiple locations and contractors on the Hanford Site.

General Scope:

The Contractor shall operate and maintain the 222-S Laboratory Complex to support analysis activities performed by the (LA&TS).

Detailed Scope and Requirements:

Integrated Planning

The Contractor shall coordinate with the (LA&TS) to develop integrated Hanford Site-wide analysis plans, data quality objectives, and provide process and analytical technology support.

The Contractor shall document the interfaces in a mutually-approved *Administrative Interface Agreement with the Analytical Services Production Contractor* (Deliverable C.2.1.3-1) and submit to DOE-ORP for information.

The Contractor shall interface with the (LA&TS) to develop sample analysis rates and waste generation estimates to allow the Contractor and other Site contractors to plan sample analysis expenditures.

Instrumentation & Equipment

The Contractor shall provide analytical instrumentation and support equipment to ensure capability, capacity, storage, and reliability are available to support Hanford Site cleanup schedules.

Radiological Safety

Tank Operations Contract No. DE-AC27-08RV14800

Section J Attachment 17

J.4-1 Post Fiscal Year 2019 Cost and Fee Table

CLIN	Sub-CLIN	Auth	Post FY19	
			FY 2020	Totals
CLIN 1 Base Operations	1.1 ¹	A	0	0
	1.2.1	A	0	0
	1.2.2	A	609,878	609,878
	1.3	A	0	0
CLIN 2 SST Retrv. & Closure	2.1	A	0	0
	2.2	A	0	0
CLIN 3 WTP Support	3.1	A	0	0
	3.2	A	3,816,943	3,816,943
	3.3	A	0	0
	3.4	A	0	0
CLIN 4 Supplemental Treatment	4.1		0	0
	4.2		0	0
	4.3	A	0	0
	4.4	A	0	0
	4.5		0	0
CLIN 5 Early Feed & Operation of the WTP LAW	5.1		0	0
	5.2		0	0
	5.3		0	0
	5.4		0	0
CLIN 6 Pension & Welfare Plans	6.1	A	232,709	232,709
	6.2	A	0	0
Base Contract Sub-Totals	Contract Cost		4,659,530	4,659,530
	Available Fee ¹		0	0
	Contract Price		4,659,530	4,659,530
CLIN 7 American Recovery and Reinvestment Act (ARRA)	7.1	A	0	0
	7.2	A	0	0
	7.3	A	0	0
	7.4	A	0	0
	7.5	A	0	0
	7.6	A	0	0
CLIN 8 Contract Closeout	8.1		0	0
ARRA & Contract Closeout Sub-Totals	Contract Cost		0	0
	Available Fee		TBD	TBD
	Contract Price		TBD	TBD
Contract Totals	Contract Cost		4,659,530	4,659,530
	Available Fee ¹		348,787	348,787
	Contract Price		5,008,317	5,008,317

ATTACHMENT 2

Cost Table

Total: 3 pages including this cover page

WBS	Title	WRPS Going in Position	Negotiation Adjustments	WRPS Current Position	DOE Going in Position	DOE Adjustments	DOE Current Position	Delta	Negotiated
5.01.01.01	Base Operations Project Mgmt	11,504,942.67	-	11,504,942.67	11,504,942.67	-	11,504,942.67	-	Y
5.01.01.03	TSR Administrative Controls	4,564,385.23	-	4,564,385.23	5,665,308.72	(1,100,923.48)	4,564,385.23	-	Y
5.01.01.04	Core Services	4,726,139.47	-	4,726,139.47	3,600,652.94	1,125,486.53	4,726,139.47	-	Y
5.01.01.05	Tank Chemistry and Integrity	10,680,781.73	-	10,680,781.73	12,043,157.41	(1,362,375.68)	10,680,781.73	-	Y
5.01.01.06	Solid Waste Management	11,090,347.47	-	11,090,347.47	11,189,013.36	(98,665.89)	11,090,347.47	-	Y
5.01.01.10	TOC Direct Facilities Support	18,234,539.07	-	18,234,539.07	15,203,766.12	3,030,772.95	18,234,539.07	-	Y
5.01.01.11	Base Operations East Area Farms	30,640,919.21	-	30,640,919.21	30,640,919.21	-	30,640,919.21	-	Y
5.01.01.12	Base Operations West Area Farms	12,373,871.33	-	12,373,871.33	12,373,871.33	-	12,373,871.33	-	Y
5.01.01.13	Base Operations Support/Special Projects	55,534,974.73	(2,836,748.73)	52,698,226.00	45,638,487.00	7,059,739.00	52,698,226.00	-	Y
5.01.01.16	TOC Maintenance Program	4,071,046.41	-	4,071,046.41	3,326,625.25	744,421.15	4,071,046.41	-	Y
5.01.01.17	MSA J.3 UBS Services	5,287,430.02	-	5,287,430.02	8,728,273.35	(3,440,843.33)	5,287,430.02	-	Y
5.01.02.02	Tank Waste Volume Management	3,768,176.30	-	3,768,176.30	3,768,176.30	-	3,768,176.30	-	Y
5.01.02.03	242-A Evaporator	11,602,280.59	-	11,602,280.59	11,505,411.65	96,868.94	11,602,280.59	-	Y
5.01.02.06	Effluent Treatment Facility	39,075,606.14	(3,500,000.00)	35,575,606.14	33,623,955.32	1,951,650.82	35,575,606.14	-	Y
5.01.03.01	222-S Laboratory Facility	156,056.94	-	156,056.94	427,254.66	(271,197.72)	156,056.94	-	Y
5.01.03.03	222-S Laboratory Facility Option Period 2-3	42,012,069.75	-	42,012,069.75	43,631,441.17	(1,619,371.42)	42,012,069.75	-	Y
5.01.04.01	Field Projects/DST Life Extension	19,478,336.98	-	19,478,336.98	20,450,174.09	(971,837.12)	19,478,336.98	-	Y
5.01.04.03	Tank Farm Field Projects	4,065,217.88	-	4,065,217.88	4,065,217.88	-	4,065,217.88	-	Y
5.01.05.01	Project Integration	23,793,032.93	-	23,793,032.93	21,405,293.91	2,387,739.02	23,793,032.93	-	Y
5.01.05.02	ESH&Q	43,772,429.48	-	43,772,429.48	43,772,429.48	-	43,772,429.48	-	Y
5.01.05.03	Security and Emergency Services	2,124,623.40	-	2,124,623.40	1,658,889.05	465,734.34	2,124,623.40	-	Y
5.01.05.04	Central Engineering	17,263,222.29	-	17,263,222.29	17,263,222.29	-	17,263,222.29	-	Y
5.01.05.10	Organizational Performance Improvement	3,104,787.66	-	3,104,787.66	3,104,787.66	-	3,104,787.66	-	Y
5.01.05.11	Vapor Implementation	13,930,389.57	-	13,930,389.57	16,577,374.97	(2,646,985.41)	13,930,389.57	-	Y
5.01.05.12	TOC Training Program	14,296,667.20	-	14,296,667.20	14,296,667.20	-	14,296,667.20	-	Y
5.02.01.01	Retrieval Program	20,703,669.07	-	20,703,669.07	20,533,593.85	170,075.22	20,703,669.07	-	Y
5.02.01.03	Cold Test Facility (CTF)	522,819.90	-	522,819.90	395,323.87	127,496.04	522,819.90	-	Y
5.02.01.04	Vadose Zone / Interim Measures	4,888,525.45	-	4,888,525.45	4,888,525.45	-	4,888,525.45	-	Y
5.02.01.07	Inactive Waste Sites	379,774.56	-	379,774.56	120,636.19	259,138.37	379,774.56	-	Y
5.02.02.06	C-Farm Retrieval	71,662.88	-	71,662.88	71,662.88	-	71,662.88	-	Y
5.02.04.01	Closure Program Management	851,307.10	-	851,307.10	851,307.10	-	851,307.10	-	Y
5.02.04.02	Regulatory Documentation	5,060,268.16	-	5,060,268.16	5,060,268.16	-	5,060,268.16	-	Y
5.02.05.06	C Farm Closure	1,146,138.07	-	1,146,138.07	1,081,833.36	64,304.71	1,146,138.07	-	Y
5.02.06.02	A-Farm Infrastructure	8,801,227.52	-	8,801,227.52	8,801,227.52	-	8,801,227.52	-	Y
5.02.07.06	AX-101/AX-103 Retrieval	623,274.17	-	623,274.17	1,132,605.41	(509,331.24)	623,274.17	-	Y
5.02.07.07	AX-102 & AX-104 Retrieval	19,894,413.34	-	19,894,413.34	19,894,413.34	-	19,894,413.34	-	Y
5.02.07.09	A/AX Farms Ventilation System Operations	917,307.84	-	917,307.84	671,552.99	245,754.85	917,307.84	-	Y
5.02.08.01	A/AX Common Upgrades	25,333,435.00	-	25,333,435.00	25,333,435.00	-	25,333,435.00	-	Y
5.02.08.03	A/AX Equipment Removal	5,272,348.91	-	5,272,348.91	5,979,228.57	(706,879.66)	5,272,348.91	-	Y
5.02.08.04	A/AX Infrastructure (Water and Utilities)	11,126,180.84	-	11,126,180.84	11,126,180.84	-	11,126,180.84	-	Y
5.02.08.10	A-Farm Equipment Removal	8,951,075.13	-	8,951,075.13	8,951,075.13	-	8,951,075.13	-	Y
5.03.01.01	WFD Program Management	7,191,010.69	-	7,191,010.69	5,696,599.98	1,494,410.71	7,191,010.69	-	Y
5.03.01.02	WFD System Plan and Modeling	6,376,822.55	-	6,376,822.55	4,935,213.64	1,441,608.91	6,376,822.55	-	Y
5.03.01.03	Waste Characterization	2,934,662.99	-	2,934,662.99	2,378,859.51	555,803.48	2,934,662.99	-	Y
5.03.01.06	Process Engineering	2,462,488.66	-	2,462,488.66	2,462,488.66	-	2,462,488.66	-	Y
5.03.01.07	WFD Engineering	12,458,648.78	-	12,458,648.78	12,458,648.78	-	12,458,648.78	-	Y
5.03.06.01	Dispose ILAW	7,333,625.87	-	7,333,625.87	7,165,547.16	168,078.71	7,333,625.87	-	Y
5.03.07.05	WTP Interface Management	832,861.95	-	832,861.95	832,861.95	-	832,861.95	-	Y

5.03.07.08	WTP Pre-Operations and Commissioning	1,901,575.48	-	1,901,575.48	1,901,575.48	-	1,901,575.48	-	Y
5.03.10.03	Secondary Waste Form Testing	540,451.19	-	540,451.19	540,451.19	-	540,451.19	-	Y
5.03.11.01	Wiped Film Evaporator (WFE)	114,938.45	-	114,938.45	114,938.45	-	114,938.45	-	Y
5.03.12.01	Strategic Initiatives	584,127.66	-	584,127.66	489,742.64	94,385.03	584,127.66	-	Y
5.03.12.02	Technology Development	7,257,723.85	-	7,257,723.85	7,257,723.85	-	7,257,723.85	-	Y
5.03.12.03	Operational Optimization	874,299.85	-	874,299.85	874,299.85	-	874,299.85	-	Y
Subtotal		572,558,940.33	(6,336,748.73)	566,222,191.60	557,467,133.75	8,755,057.86	566,222,191.60	-	
Errata		18,614,333.34	(3,401,405.57)	15,212,927.77	16,625,330.75	(1,412,402.98)	15,212,927.77	-	
Risk		44,972,420.68	(27,472,420.68)	17,500,000.00	-	17,500,000.00	17,500,000.00	-	
Risk captured as Errata		880,120.76	(880,120.76)	-	-	-	-	-	
Impact of updated rates (FY19)		-	-	(10,414,929.89)	-	-	(10,414,929.89)	-	
FY 2019 Total		637,025,815.10	(38,090,695.73)	588,520,189.48	574,092,464.50	24,842,654.87	588,520,189.48	-	

ATTACHMENT 3
Risk Register

Total: 29 pages including this cover page

Risk Register

This register represents the risks associated with FY19/20 current work scope that WRPS plans to execute include:

- Retrievals (A/AX Farms)
- Waste Transfer
- 222-S Laboratory
- 242-A Evaporator
- Effluent Treatment Facility
- Tank farms program level risks.

Risks within the register have titles that are similar; however, these risks are associated with different projects/programs that have completely different cost consequences and likelihoods based upon the size, duration and priority.

The risks within this register have been developed by WRPS subject matter experts.

This register list excludes any cross cutting register risks, business practice risks, and information technology risks.

Program	Risk ID	Title	Owner/ Organization	Description
Retrievals	AAXRC-0007-R	Requirements Change	DOE ORP	DOE controls the requirements for work on the Hanford Site. A risk exists that DOE implements programs (examples: Be Program, DOE decides to change seismic requirements) which leads to additional controls and measures required throughout the project.
Retrievals	AAXRC-0044-R	Inability to Adequately Staff the Project	WRPS	Resources from various organizations will be required to support project activities throughout the execution of the A/AX retrieval project. A risk exists that resources will not be available when needed to support project work.
Retrievals	AAXRC-0077-R	Tank Vapors Result in Unanticipated Work Stoppages	DOE ORP	Extensive field work will be required in the A Farm complex in order to execute this project. Recent issues related to vapors within the A Farm complex have resulted in multiple stop work orders. A risk still exists that unexpected vapor releases cause delays in the execution of field work.
Retrievals	AAXRC-0091-O	Certain A Farm tanks may not be necessary to retrieve based on video inspection and regulator buy off	DOE-ORP/WRPS	The current plan is to retrieve all tanks in A Farm. An opportunity exists that the regulatory body agrees that retrieval of A-104/ A-105 is not necessary due to data package. WRPS owns the responsibility to work with the regulators, alongside ORP, to support a determination that further retrieval isn't necessary. ORP owns the cost and schedule benefit should a favorable determination result in reduced contract scope.
Tank Farm Program	TFPRO-0001-R	TFP Priorities Changes Frequently or are Not Adequately Controlled	DOE-ORP/WRPS	Priorities for tank farm projects are based on WRPS needs to support the existing facilities and established milestones. A risk exists that changes in work priorities results in the lack of resources when needed to execute currently planned project activities. WRPS owns the risk impacts when they initiate the reprioritization of work and DOE owns the risk impacts when they direct the reprioritization of work. This risk addresses elective prioritization of work within WRPS' control.
Tank Farm Program	TFPRO-0002-R	As Found Field Conditions Differ from Expected (Materials & Radiological)	DOE-ORP/WRPS	The tank farm is an aging facility. During construction of the tank farm, the support facilities, and initial transfers of waste into waste tanks less emphasis was placed on the importance of configuration management. As a result, there are known issues within the tank farm regarding as found conditions. Additionally, to facilitate project work over the years, ECNs have been used as opposed to full updates to the facility design drawings. This practice makes it difficult to find updated versions of facility design drawings. WRPS owns ECN development and incorporation into the design package drawings. ORP owns the effort to incorporate all modification drawings and associated outstanding ECNs into a baseline drawing set.
Tank Farm Program	TFPRO-0004-R	Lack of Critical Resources	WRPS	Resources (Personnel and equipment) are often a critical need for the performance of project work. A risk exists that the unavailability of qualified staff will prevent the planned execution of project scope.

Program	Risk ID	Title	Owner/ Organization	Description
Tank Farm Program	TFPRO-0007-R	Aging Infrastructure Requires More Upkeep Causing Schedule Delays	DOE-ORP/WRPS	The tank farm is an aging facility. Over time many repairs, both permanent and temporary, have occurred to the WRPS facilities and infrastructure. TFP is responsible for the identified projects that are ongoing to upgrade and maintain WRPS facilities and infrastructure. A risk exists that more infrastructure upgrades are required than planned causing schedule delays. WRPS owns routine maintenance and component repairs. ORP owns system replacement/upgrades.
Tank Farm Program	TFPRO-0023-R	Unexpected Work Stoppages	DOE-ORP/WRPS	Work stoppages occur with relative frequency at Hanford due to safety concerns and other operational issues. Work stoppages occur with relative frequency at Hanford due to safety concerns and other operational issues. WRPS is responsible for work delays less than a week and ORP is responsible for any longer term work delays. A risk exists that either WRPS or other Hanford contractors have stop works that delay ECs
Tank Farm Program	TFPRO-0028-R	Adverse Weather Conditions (more extreme than anticipated)	DOE-ORP/WRPS	The Hanford Site can be subject to various different types of weather conditions from ice in the winter, high winds all year around, or smoke due to fires in the area or on the site. A risk exists that inclement weather causes unplanned work stoppages and site closures causing delays and budget impacts. WRPS is responsible for reasonable weather impacts (at most 4 days combined of site closures) and ORP is responsible for any delays beyond (extreme weather impacts).
Tank Farm Program	TFPRO-0029-R	Contractor managed aging infrastructure exposes WRPS to unexpected work stoppages	DOE ORP	WRPS is just one of three prime subcontractors executing work for DOE. Unforeseen emergencies caused by facility failures/damage can result in exclusion areas which restrict WRPS work performance, i.e. schedule and cost. A risk exists that other Hanford site contractors cause project delays to WRPS due to hazards which cause unexpected work stoppages.
Production Ops	242AE-0005-R	Re-boiler failure (E-A-1)	DOE-ORP/WRPS	Currently inside the evaporator includes part of the second pass loop. However, the reboiler is one component that could fail catastrophically if a thermal shock occurred during an evaporator campaign. There have been no inspections of the reboiler tubes, nor a formal analysis of the thermal shock events it has experienced to date. Thus, the likelihood of a reboiler failure cannot be quantified at this point. A risk exists that if the re-boiler fails, even though a spare has been procured, substantial delays to planned Evaporator campaigns occurs until the new unit is installed and tested. WRPS is responsible for maintenance of the replacement re-boiler but ORP is responsible to fund installation of the re-boiler.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0007-R	Feed pump failure	DOE-ORP	Feed pump AP-102-AW Reliability is .687 according to the RPP-RPT-49610, Rev 0, Reliability Assessment of the 242-A Evaporator at the Hanford Tank Farms. This pump is currently the oldest operating pump in the tank farms (1980s). ORP will fund the replacement jumper and pump installation. A risk exists that feed pump failure will halt Evaporator campaigns or delay planned Evaporator campaigns.
Production Ops	242AE-0014-R	Coriolis (UE-CA1-3) element failure	WRPS	UE-CA1-3 is a multi-variable Coriolis flow element. The signal from the element then goes (UIT-CA1-3) to a multi-variable transmitter. From this transmitter, an analog flow, analog density, and digital trouble signal are sent independently to the Monitoring and Control System (MCS). A risk exists that UE-CA1-3 fails and the MCS shuts down the Evaporator until the reason for failure is remedied.
Production Ops	242AE-0016-R	Canyon crane failure	DOE-ORP/WRPS	Currently the Bridge Crane is operational and continues to perform as necessary. A risk exists that a bridge crane failure results in the ability to perform large equipment repairs/replacements possibly delaying planned Evaporator campaigns. WRPS is responsible for routine maintenance and component repairs but ORP is responsible to fund a crane procurement and installation.
Production Ops	242AE-0019-R	Utility Steam Supply System Unavailable	DOE ORP	Currently Steam is available on an as needed basis as a government furnished utility, on an ongoing basis. The maintenance schedule starts at the completion of the annual campaign schedule (assuming 12 to 16 weeks of continuous run) and is a continuous pm schedule. This maintenance includes State Inspections (Internal/External) that are currently scheduled Nov./Dec. and July/Aug. This preventive maintenance schedule is required each time the steam system is brought up to pressure and operated. If the campaign operation period is split by no longer than two weeks, JCI has customarily kept the boiler annex in "hot-standby mode" (boilers in operational rotation). If the stand-by period is going to be greater than two weeks and operation will occur prior to the next inspection period, JCI must shut-down the steam system and perform, at a minimum, a corrosion prevention pm. This pm requires +/- one week. If operation will not commence prior to the next inspection period, JCI will roll into a full preventive maintenance schedule. Any campaign extension, beyond the current 12-16 week "hot-operation" schedule, will erode the current (annual) preventive maintenance schedule at the 242A boiler annex and require compression of the current preventive maintenance program. Any compression and or dissection of the current maintenance schedule at the 242A boiler annex will likely be realized in the form of operational downtime due to equipment failure.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0020-R	Dump Valves Fail	DOE- ORP/WRPS	The 28-inch recirculation line in the evaporator room connects with a drain line that allows the contents of the C-A-1 vessel to dump into DST AW-102 by gravity. A six-inch line with two dump valves in series runs between the recirculation line and the 10-inch drain line (DR-335) that goes into Tank AW-102. The dump valves, HV-CA1-7 and HV-CA1-9, are ball valves whose stems are connected by drive shafts to remote air actuators in the adjacent condenser room. Both valves must be open at the same time to allow the vessel contents to drain by gravity to Tank AW-102. The dump valves are important because they provide a means of emptying the vessel. A risk exists that dump valve failure will occur resulting in the inability to empty the C-A-1 vessel. WRPS is responsible for routine maintenance and system flushes. ORP is responsible for procurement and installation of new dump valves.
Production Ops	242AE-0021-R	E-C-1 Condenser Failure	DOE- ORP/WRPS	The original Primary Condenser had 4% of its tubes plugged when it was replaced during the 5-year outage that began in April 1989. When the E-C-1 condenser was replaced with the stainless steel condenser sitting in the lay-down yard of the 2101 Warehouse. A risk exists that condenser failure interrupts Evaporator operations and may delay planned Evaporator campaigns. WRPS is responsible for the routine maintenance of E-C-1 and the surrounding system. ORP is responsible for funding the procurement and installation of a new spare condenser.
Production Ops	242AE-0022-R	Raw Water Strainer Failure	DOE- ORP/WRPS	Raw Water system strainers F-RW-1 & 2 in the 242-A Evaporator Water Services Building, continue to operate and perform their basic function, but some leakage could worsen over time. A risk exists that a raw water strainer failure can occur interrupting the availability of raw water to the Evaporator curtailing operations and possibly planned Evaporator campaigns until remedied. WRPS is responsible for the routine maintenance of raw water strainer. ORP is responsible for system replacements and major facility upgrades.
Production Ops	242AE-0025-R	Critical Spares Unavailable When Required	DOE- ORP/WRPS	Appropriate spares planning and management is the responsibility of WRPS. Factors (some outside of the control of WRPS such as funding) may impact the ability to maintain and have available critical spares when needed. WRPS is responsible for identifying critical spares and procurement of an initial set of spares. ORP is responsible for additional critical spare part procurements. A risk exists that if critical spares are not available when needed, Evaporator operations are halted until these components can be replaced.
Production Ops	242AE-0028-R	Funding Not Available When Required	DOE ORP	Funding is required for execution of all 242-A work. Projects establish expected/planned funding profiles during the original base lining period. A risk exists that lack of available funding limits planned execution of work which may include execution of planned maintenance and/or upgrades in turn raising the likelihood of Evaporator unavailability when needed. to support other planned operations (e.g., SST waste retrievals, chemistry control actions, etc.)

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0029-R	Priorities Change Frequently (ops)	DOE-ORP	Priorities for 242-A projects are based on WRPS needs to support the existing facilities and established milestones. This risk addresses elective prioritization of work within WRPS' control as well as those prioritizations outside of WRPS' control as ORP owned. A risk exists that changing priorities result in the inability to maintain the Evaporator to ensure it is available when needed to support other ongoing planned operations and established milestones.
Production Ops	242AE-0030-R	New Requirement or New Interpretation of Existing Requirement is Imposed	DOE ORP	242-A teams are responsible for compliance with all existing regulatory requirements. A risk exists that new or changing requirements or the need to change the approach to meeting them results in changes to our planned work to ensure compliance can be maintained and introduces possible delays.
Production Ops	242AE-0034-R	PB-1 Failure	DOE ORP	Currently PB-1 Recirculation Pump has a Min/Max Water Flow rate of 0.25/3.0 gpm, a Min/Max Water Pressure of 35/90 psig, with a Maximum current of 260 Amps. ORP will fund the replacement jumper and pump installation. A risk exists that feed pump failure will halt Evaporator campaigns or delay planned Evaporator campaigns.
Production Ops	242AE-0036-R	Steam Line Failure	DOE-ORP/WRPS	Currently the integrity of the Steam Line that is associated with the Steam Supply appears to be in fairly good condition. A risk exists that the steam line fails and steam is not available to support Evaporator operations. Line failure could also cause delays to planned Evaporator campaigns. WRPS is responsible for maintenance and simple repairs and ORP is responsible for major repairs/line replacement.
Production Ops	242AE-0053-R	AW In Let Freezing	DOE-ORP/WRPS	Winter months can result in freezing temperatures and in some cases freezing fog. A risk exists that the AW in let has significant ice accumulation resulting in unplanned shutdown of the Evaporator until the ventilation air flow can be restored. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible for system replacements.
Production Ops	242AE-0054-R	AW Leak Detector Failure	DOE ORP	Parts for the current leak DST leak detector system have to be cannibalized. A risk exists that leak detector failures occur and parts cannot be cannibalized.
Production Ops	242AE-0055-R	AW Tank Temp Monitoring Failure	DOE ORP	A risk exists that the AW tank temperature monitoring system fails resulting in a halt to the transfer of feed into or out of the Evaporator until remedied.
Production Ops	WASTE-0009-R	Not Having the Ability to Pump Annulus per Pumping Guide Regulations	WRPS	Pumping the annulus per regulations of ecology, the pumping guide says you will complete annulus pumping in 10 days. Right now engineering has realistically proposed pumping the annulus to take 27 days. A risk exists that pumping annular tank spaces will take longer than 10 days resulting in possible environmental compliance fines.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	WASTE-0017-O	Completely By-pass AY-102	DOE-ORP/WRPS	An opportunity exists that AY-102 can completely be bypassed. This can be done by designing a new pipe in pipe transfer line through AY-02A.
Production Ops	WASTE-0018-O	AY 101 Pump and Jumper Replacement	DOE-ORP/WRPS	In order to avoid accidental waste transfers into AY-102 a replacement of tank farms infrastructure will need to take place. An opportunity exists that to bypass AY-102 by installing a new pump and jumper for AY-101.
Production Ops	WASTE-0021-R	Requirements Change	DOE-ORP	Changes to requirements can occur at any moment at the Hanford Site. A risk exists that requirement changes result in the need to replan previously planned work leading to delays in planned waste transfers. ORP is responsible for requirement changes or any miscommunications they initiate.
Production Ops	ETFOP-0030-R	Thin Film Dryer System Failure (Joint owned)	DOE-ORP/WRPS	Current spares for the rotor and the vessel are being maintained. A risk exists that the rotor and/or vessel fail causing replacement to occur and halting ETF operations. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0050-R	Life Cycle Study Identifies Significant Replacement Needs	DOE-ORP/WRPS	The IQRPE assessment will take place in FY 19. A risk exists that the assessment leads to further replacements. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0052-R	Insufficient Load-in/ Drain and Filter System For Processing	WRPS	A risk exists that failure of the load-in/drain and/or filter system results in a halt to the acceptance of effluent into ETF.
Production Ops	ETFOP-0053-R	MCS System Failure	DOE-ORP/WRPS	A risk exists that failure of the MCS will halt ETF operations until remedied. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0055-R	Insufficient Amenities Require Significant Remodel	DOE ORP	Current non-processing pipe is made of galvanized piping. A risk exists that piping or other amenities must be replaced.
Production Ops	ETFOP-0056-R	SALDS Caissons/Relief Valves Failure	DOE ORP	The current valves are made of plastic. A risk exists that the caissons or relief valves fail halting the transfer of treated effluent to the SALDS.
Production Ops	222SL-0008-R	Funding Not Available When Required	DOE ORP	222-S Laboratory Upgrades have historically been under funded, hindering the Laboratories avoidance of becoming a Single Point Failure. A risk exists that lack of funding halts planned 222-S lab upgrades, and one or more of the aging systems fails causing a shutdown of lab operations until remedied.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	222SL-0009-R	222-S Laboratory Analytical Capabilities Are Exceeded	DOE-ORP/WRPS	Given the increased focus on DFLAW and LAWPS, and the newness of the Program, the level of necessary laboratory support is uncertain. The CVAP Phase 1 implications also play a significant role. A Risk exists that the level of necessary laboratory support may exceed the existing, planned laboratory capacity to perform. Priorities for 222-S Labs are based on WRPS needs to support the existing scopes of work and established milestones. WRPS is responsible to integrate other program and project needs, but ORP is responsible for any lab modifications or sustained operational shift changes.
Production Ops	222SL-0020-R	New Regulatory Requirements and/or New Interpretation of Existing Requirements are Imposed	DOE ORP	222-S Laboratory is responsible for compliance with all existing regulatory requirements. A risk exists that new requirements are imposed and rework is required.
Production Ops	222SL-0023-R	Procurements are Delayed	WRPS	Procurements are required for most projects. A risk exists that procurement delays impact planned work execution. Responsibility for impacts requires assessment of specific conditions when/if the risk is realized. Risk addresses those items that foreseeable and within WRPS' control.
Production Ops	222SL-0036-R	Process water system failure	DOE-ORP/WRPS	The current process water system has sprung one minor leak within the last year. MSA has recently sent a noncompliance letter due to lack of air gap. A risk exists that the system begins to leak consistently, requires a total system replacement, and/or water gap must be installed. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible for system replacements and major modifications to process water system..
Production Ops	222SL-0037-R	Failure to Maintain Facility Lab Equipment	DOE ORP	A separate contractor from WRPS currently maintains the facility equipment for 222-S. A risk exists that equipment breaks down due to lack of maintenance and causes the shutdown of one or more lab systems.
Retrievals	AAXRC-0002-R	Premature Pump Failures	DOE ORP	Pumps will be used throughout the retrieval tanks to move waste and remove waste as necessary. Generally associated with failures associated with factors outside of WRPS' direct control. A risk exists that premature pump failure will result in unplanned waste retrieval delays.
Retrievals	AAXRC-0010-R	Change in AB Design Requirements (PISA declared)	DOE ORP	The project baseline includes some allowances for DSA changes which are assumed to occur during the project life. A risk exists that changes to the authorization basis require extensive changes to planned work execution processes and activities.

Program	Risk ID	Title	Owner/ Organization	Description
Retrievals	AAXRC-0011-R	Waste not as Expected (different than characterized) – Takes longer or cannot be retrieved	DOE ORP/ WRPS	Although waste in A and AX farms has been previously characterized a risk still exists that once retrieval operations are initiated, unexpected waste characteristics are encountered causing the need to change retrieval designs and technologies in order to reach waste retrieval goals.
Retrievals	AAXRC-0016-R	Excessive Equipment Failures (other than pumps)	DOE- ORP/WRPS	Tank retrieval operations involve a variety of both heavy and light equipment in order to function. The complex and high radiation environment for technology deployment can result in a higher than industry equipment failure rate. A risk exists that equipment failure rates are higher than planned causes delays in waste retrieval operations. WRPS is responsible for maintenance and simple repairs and ORP is responsible for major repairs/replacement.
Retrievals	AAXRC-0020-R	Retrieval System Tank Leak	DOE ORP	The project has assumed that following engagement with the stakeholders that only two tanks (A-104 & A-105) will be considered leaking tanks. The remaining SSTs will be retrieved using known sluicing technologies. A risk exists that agreement with the stakeholders cannot be reached regarding tanks considered to be previous leakers causing deployment of nonexistent or nonstandard sluicing technologies.
Retrievals	AAXRC-0026-R	Loss of Key Suppliers/Vendors	WRPS	Vendors and suppliers will provide critical engineered equipment, materials, services and other support to the retrieval of A/AX Farms. A risk exists that key vendors become unavailable or are no longer deemed preferred by procurement. This risk addresses supply chain issues which should have been foreseeable and preventable by the contractor.
Retrievals	AAXRC-0030-R	Funding Not Available When Required	DOE ORP	Funding is required for execution of the A/AX Farm Retrieval project scope. A risk exists that funding may not be available when required limiting the amount of waste retrievals performed.
Retrievals	AAXRC-0031-R	Retrieval Spill	DOE- ORP/WRPS	A risk exists that a spill occurs or is discovered during the retrieval process and work is halted while remediation and corrective actions are implemented. WRPS is responsible for small localized spill cleanup and ORP is responsible for area cleanup
Retrievals	AAXRC-0036-R	Installed Equipment Not Suitable Prior to Retrieval Operations	DOE ORP	A/AX Farms Retrieval is also a test run for how the other SST Farm Retrievals will be executed. This involves installing the retrieval infrastructure first in order to more streamline the entire farm's retrieval. A risk exists that previous infrastructure upgrades are not sufficient to support planned retrieval equipment/operations.
Retrievals	AAXRC-0043-R	Equipment in Risers is more difficult to remove than anticipated	DOE- ORP/WRPS	In order to begin retrieval of a tank certain equipment must first be removed. A risk exists that excess equipment removal is more difficult than planned causing delays to the installation of waste retrieval equipment. WRPS is responsible for removal of these items is straight forward and the effort takes less than a week. ORP is responsible to fund removal of all other items that are difficult to remove.

Program	Risk ID	Title	Owner/ Organization	Description
Retrievals	AAXRC-0055-R	As Found Field Conditions Differ From Expected	DOE ORP	Drawing at Hanford are not always accurate to the installation of the design. The risk is present that planned work or designs may need to be replanned or redesigned to fit accurate dimensions of the space available or the conditions of the space.
Retrievals	AAXRC-0056-R	Operating Equipment Not Removable or Maintainable (e.g., MARS-V)	DOE ORP	A variety of retrieval methods will be needed to retrieve SSTs. Waste retrieval at Hanford involves specialized equipment such as the MARS-V. This equipment may not be mobile or durable enough to effectively complete retrieval of each tank.
Retrievals	AAXRC-0070-R	Oxalic Acid Cannot be Added to Tanks	DOE ORP	In order to assist in softening the contents of the tank to better assist in retrieval, Oxalic Acid is used. A risk exists that the use of oxalic acid will not be allowed extending waste retrieval times and possible deployment of an alternate retrieval technology(s).
Retrievals	AAXRC-0076-R	Pit Work is More Complex Than Anticipated	WRPS	Drawings at Hanford are not always accurate to the installation of the design. A risk exists that pit work is more complex than anticipated and requires additional time and cost to remediate.
Retrievals	AAXRC-0079-R	ORP Requires RA/ORR Prior to Operations	DOE ORP	In order to transfer work to operations upon the completion of A/AX Farms an RA/ORR may be required. A risk exists that completion of an Operational Readiness Review is required in addition to the planned turnover documentation.
Retrievals	AAXRC-0082-R	Cranes Not Available As Required	DOE-ORP/WRPS	Cranes are required to support various Retrievals activities. WRPS obtains all cranes from MSA for use. Cranes and/or crane operators/rigging crews are not available when required. WRPS is responsible to identify crane needs and integrate crane operations into their planned work. ORP is responsible to ensure cranes are available when needed to support WRPS planned work.
Retrievals	AAXRC-0083-R	Bump and Roll Materially Impacts Project Staffing	DOE ORP	Certain work at Hanford has a bump and roll standard. This means that at any time in a project a more senior individual can take another person's place in that project. A risk exists that critical resources are bumped and the new resources lack the training/knowledge necessary to execute the work as planned.
Retrievals	AAXRC-0087-R	Third Technology Must be Added to TWRWP	DOE ORP	ORP has directed WRPS to include two technologies in the TWRWP. This is not consistent with the accepted proposal A risk exists that deployment of a third technology is necessary to achieve waste retrieval goals, requiring amendment of the existing TWRWP.
Retrievals	AAXRC-0090-O	Partial Redesign or Consolidation of Design to Simplify and Mitigate Risk	DOE-ORP/WRPS	An opportunity exists that alternative design approaches meeting functional requirements may be simpler to implement with less risk when compared to current retrieval approaches. Routine redesign or design optimization opportunities are owned by WRPS. Significant redesign or streamlining associated with major schedule acceleration or cost savings are ORP owned.

Program	Risk ID	Title	Owner/ Organization	Description
Retrievals	AAXRC-0093-R	Lack of Sufficient Heavy Load Transport Trailers	DOE ORP	There are currently a limited number of heavy load transport trailers available to WRPS projects. A risk exists that access to trailers causes project delays.
Tank Farm Program	TFPRO-0003-R	Funding Not Available When Required	DOE ORP	Funding is required for execution of all TFP work. Projects establish expected/planned funding profiles during the original baselining period. A risk exists that funding is not available when needed causing delays in the execution of planned work.
Tank Farm Program	TFPRO-0005-R	Insufficient Integration with other WRPS Organizations (Production Operations / Retrieval /Labs)	WRPS	TFP routinely performs activities in areas and facilities operated and maintained by other organizations. Retrieval and Base Ops both maintain their own schedules to meet and maintain their own performance milestones. A risk exists that insufficient integration with other WRPS organizations results in delays to planned project work.
Tank Farm Program	TFPRO-0006-R	New Interpretation of Existing Requirement is Imposed	DOE ORP	TFP teams are responsible for compliance with all existing regulatory requirements, however differing interpretations of existing requirements may drive changes in cost or schedule during execution.
Tank Farm Program	TFPRO-0008-R	Sub-contractors Do Not Perform As Required	DOE-ORP/WRPS	Sub-contractors are utilized for a number of functions and support roles throughout TFP. Subcontractor inability to perform to requirements may result in cost and schedule impacts (DOE-ORP). Delays may also occur due to subcontractor performance (WRPS). A risk exists that delays/rework occur due subcontractor inability to perform as required. Responsibility for impacts requires assessment of specific conditions when/if the risk is realized.
Tank Farm Program	TFPRO-0015-R	Procurements are Delayed	WRPS	Procurements are required for most TFPs. Responsibility for impacts requires assessment of specific conditions when/if the risk is realized. This risk addresses those items that are foreseeable and within WRPS' control. A risk exists that procurement delays impact planned work execution
Tank Farm Program	TFPRO-0024-R	Lack of Adequate Critical Spares	DOE-ORP/WRPS	Appropriate spares planning and management is the responsibility of WRPS. Factors (some outside of the control of WRPS such as funding) may be impact the ability to maintain and have available critical spares when needed. WRPS is responsible for identifying critical spares and procurement of an initial set of spares. ORP is responsible for additional critical spare part procurements. A risk exists that if critical spares are not available when needed, Evaporator operations are halted until these components can be replaced.

Program	Risk ID	Title	Owner/ Organization	Description
Tank Farm Program	TFPRO-0026-R	Personal Protective Equipment (PPE) Availability Impacts Field Work Execution	WRPS	Due to implementation of the TVAT Recommendations at Tank Farms, an increase in the utilization of various levels of PPE has been realized. A risk exists that work is delayed due to the availability of PPE.
Tank Farm Program	TFPRO-0030-R	WRPS Engineering support to design reviews impacts scheduled work	WRPS	Single point failures in design reviews/design authority may result in delays to field execution schedule. A risk exists that WRPS engineering resources are not available when needed.
Tank Farm Program	TFPRO-0031-R	Engineering Driven Design Change Late in Design	WRPS	Engineering can change designs based upon requirements or preference. A risk exists that design changes occur late in the design process.
Tank Farm Program	TFPRO-0032-R	Subcontractor Delays Due to Resources	WRPS	Fixed price subcontractors have the ability to bid multiple jobs. A risk exists that projects are delayed due to subcontractors not supplying sufficient trained/qualified workers to staff all awarded contracts during the same period of performance.
Production Ops	242AE-0001-R	242-A Aging Facility and Equipment Requires Unplanned Repair or Unanticipated Upgrades	DOE-ORP/WRPS	The 242-A Evaporator is an aging facility. Various upgrades have been carried out to the facility, ancillary systems, buildings, and its associated equipment; needed to support DST waste volume reduction goals and sampling and analysis to support the regulatory process. Future facility assessments may identify additional needs. A risk exists that unplanned repairs or needed upgrades can delay Evaporator campaigns. Minor equipment failures will be owned by WRPS. Any major equipment failure will be owned by ORP.
Production Ops	242AE-0002-R	Potential Failure of Mechanical Transfer Pumps to Support Transfers, Evaporator Campaigns or Level Rises (this would not include PB-1, PB-2, or Feed Pump)	DOE-ORP/WRPS	242-A Evaporator utilizes Transfer Pumps to carry out scheduled Evaporator Campaigns as necessary to meet goals. This risk addresses failure of critical transfer pumps. WRPS is responsible for minor repairs to transfer pumps. A risk exists that critical transfer pump failures result in delays to Evaporator campaigns.
Production Ops	242AE-0003-R	242-A Operating Procedures Require Major Change	DOE-ORP/WRPS	Current 242-A Evaporator Operating Procedures are specific to planned scopes of work necessary to meet goals and agreements for the operation of the 242-A Evaporator. This risk reflects changes in procedures that may be required to support changes in facility utilization or mission. A risk exists that changes in requirements, facility mission, or facility utilization will require procedure updates which can delay the start of Evaporator campaigns. Changes to the authorized safety basis are owned by ORP. WRPS is responsible for minor procedure updates.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0004-R	Evaporator Vessel Fails (C-A-1)	DOE ORP	The facility does not anticipate that the C-A-1 process vessel or any of the related piping, such as the 28-inch recirculation loop or 42-inch vapor line, would need to be replaced to extend the life of the evaporator. Results from UT testing for the last three integrity assessments, which were performed in 1993, 1998 and 2007, indicate that the C-A-1 vessel has experienced little or no change in wall thickness. The mean thickness remains at or above the nominal value, and the minimum thickness has remained essentially unchanged from 1993 to 2007. Certain components like the C-A-1 vessel and associated piping are not expected to have catastrophic failures. Rather, they are more likely to develop some type of leak over an extended period of time. A risk exists that evaporator vessel failure delays, or interrupts planned Evaporator campaigns.
Production Ops	242AE-0006-R	TKC-100 (Process condensate collection tank) Failure	DOE-ORP/WRPS	Process condensate from the 242-A Evaporator normally is discharged to the LERF via condensate collection tank TK-C-100. Process condensate supplied from condensate collection tank TK-C-100 can be recycled for use as lower and upper deentrainment sprays and as seal water for pumps P-B-1 and P-B-2. A 5 cm (2-in.) line from nozzle K on condensate collection tank TK-C-100 supplies process condensate to the condensate recycle pump P-C106. A risk exists that a failure of the condensate collection tank halts Evaporator operations or delays planned Evaporator campaigns. WRPS is responsible for basic equipment maintenance and repair while ORP is responsible if the condensate collection tank/line requires replacement.
Production Ops	242AE-0009-R	PC-5000 (Transfer Line) Leak	DOE-ORP/WRPS	Currently, it is known that pressure testing conducted in 2007, as part of the integrity assessment verifies that the pipeline has no leaks. The pipeline is approximately 5,000 feet long and consists of a three-inch primary transfer line that is encased by a six-inch containment pipe. Both the inner line and its outer encasement are made of fiberglass-reinforced, epoxy thermoset resin pressure pipe. Fiberglass pipes generally have a design life of 50 years (RPP-RPT-33307, Rev. 0, IQRPE Integrity Assessment Report for. Integrity assessment report RPP-RPT-33307 notes that the observed flow rate through the pipeline is between 20- and 60-gpm, which is less than the design flow rate of 75-gpm. It also notes that suspended solids in the waste are typically at low concentrations, and the pipe material is highly resistant to abrasion from turbulent flow. A September 2009 engineering study (HNF-3327) notes that the P-C-5000 pipeline should be replaced in FY 2021. At this point, the pipeline will have reached only ~50% of its design life, and would have accumulated just over five years of waste flow operation. The integrity assessment also claims that SCC does not represent a potential failure mode for the pipeline. A risk still exists that if the PC-5000 transfer line were to leak, waste transfer capability would be halted and delay any planned or ongoing Evaporator campaigns. WRPS is responsible for routine maintenance and individual component replacements but ORP is responsible to fund any major repairs including transfer line replacement.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0011-R	SL-167 Fails Integrity Assessment	DOE-ORP/WRPS	Currently it is known that SL-167 Transfer Line in the past, could have suffered damage due to freezing and potential over-pressurization due to pressure transients that the system may have been exposed to. A risk exists that SL-167 can fail and would interrupt the transfer of waste to and from the Evaporator resulting in Evaporator campaign delays or planned Evaporator campaigns. WRPS is responsible for routine maintenance and individual component replacements but ORP is responsible to fund any major repairs including transfer line replacement.
Production Ops	242AE-0012-R	MCS Computer System Partial Failure	WRPS	Project B-534 purchased the monitoring and control system (MCS) in 1988, and installed it in the early 1990s, during the five-year environmental shutdown. The MCS is a distributed control system used to monitor and control equipment in the 242-A Evaporator along with related portions of the DST farm facilities, including LERF. Two partial upgrades of the MCS were performed before 1999, but the bulk of the multiplexer (MUX) input and output hardware remained unchanged from 1988. A risk exists that the current multiplexer can fail resulting in the inability to control Evaporator processes bringing to a halt Evaporator operations until remedied. Planned Evaporator campaigns could also be delayed.
Production Ops	242AE-0017-R	K1 Ventilation System Failure	DOE-ORP/WRPS	Currently, the K-1 Ventilation is a new system installed in 2009. Although the K-1 ventilation system is relatively new a risk still exists it could fail halting Evaporator operations and possibly delaying future Evaporator campaigns. WRPS is responsible for routine maintenance and component repairs but ORP is responsible to fund any system procurements and installation.
Production Ops	242AE-0018-R	Steam/Process Condensate Sampling Systems Failure	WRPS	The steam condensate sampling system provides a means to sample the condensed liquid for ph., conductivity and radioactivity content. A risk exists that failure of the steam condensate sampling system stops the transfer of condensate until it can be remedied.
Production Ops	242AE-0024-R	Lack of Qualified Staff (Operations and Maintenance)	WRPS	Resources (Personnel and equipment) are often a critical need for the performance of project work. A risk exists that the unavailability of qualified staff will prevent Evaporator operations and/or maintenance resulting in delays to planned Evaporator campaigns.
Production Ops	242AE-0027-R	Creation of Group A Slurry Tank	DOE ORP	Currently, the chemistry control program discusses limits of different chemicals and composition inside tanks and used to determine the % of the Lower Flammability Limit (LFL). Documented Safety Analysis (DSA). becomes harder to implement. A risk exists that the chemistry control program is unable to identify potential tank failures/ chemistry and another group A slurry tank is created.
Production Ops	242AE-0031-R	Unexpected Work Stoppages	DOE-ORP/WRPS	Work stoppages occur with relative frequency at Hanford due to safety concerns and other operational issues. A risk exists that either WRPS or other Hanford contractors have stop works that delay ECs. WRPS is responsible for work delays less than a week and ORP is responsible for any longer term work delays.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0035-R	Air Dryer Failure	WRPS	The Instrument Air, Sahara Air Dryer has an Instrument Quality Air with a Dew Point of -20° F and -40°F, however The Air Dryer Failed, and this Risk was realized in approx.. the November/December 2014 timeframe after the last EC. The weather has been a positive for minimizing the associated impacts, with an associated and approximate +40°F Dew Point. Two Membrane Air Dryers have been installed due to this failure, one of which has been installed for the S.S. Equipment. The consequences of this Risk being realized can change due to the weather change. A risk exists air dryer failure occurs resulting the shutdown of both SS and non-SS Evaporator control systems halting Evaporator operations.
Production Ops	242AE-0037-R	Slurry Sampler Failure	DOE- ORP/WRPS	Currently the Slurry Sampling Station components have a limit to their life-span. Slurry sampler accuracy and/or failure would directly impact space management objectives. A risk exists that a failure of the slurry sampler results in a halt to slurry transfers causing adverse impacts to scheduled Evaporator campaigns. WRPS is responsible for routine maintenance of slurry sampling equipment and ORP is responsible for replacement of the slurry sampling system.
Production Ops	242AE-0038-O	Increased Throughput Due To Upgraded Feed Pump	DOE- ORP/WRPS	Currently the throughput is based upon the configuration of equipment, with throughput equal to a rate that is commensurate with the configuration and flow ratings of the equipment in use. An opportunity exists to upgrade the current feed pump and raise the Evaporator throughput rate which in turn would shorten planned Evaporator campaigns or allow more volume reduction during each campaign resulting in the need for less campaigns.
Production Ops	242AE-0039-R	Failure of Electrical Distribution System	DOE- ORP/WRPS	In order to evaporate the waste down to sufficient levels, a substantial amount of electricity is needed to dry out the waste. The constant need for high amounts of electricity brings with it the possibility that the facility's electrical system might fail. Given the age of the Evaporator electrical distribution system, a risk exists that failure of this system could occur and would result in an unplanned Evaporator shutdown until remedied. Any major electrical distribution system upgrade could potentially delay planned Evaporator campaigns as well. WRPS is responsible for routine maintenance and replacement of individual components. ORP is responsible for replacement of the electrical distribution systems.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0041-R	As Found Field Conditions Differ from Expected	DOE-ORP/WRPS	The 242 A Evaporator is part of the aging infrastructure of the WRPS Complex. Many of the drawings for the building are the originals from when the building was constructed. WRPS is responsible for development and implementation of engineering change notices generated as a result of unexpected field conditions, but ORP is responsible for any effort to consolidate the many ECN's and modification drawings into a new baseline drawing set. A risk exists that unexpected field conditions result in the need for design changes and delays execution of field work. Unexpected conditions may also be more expensive to remedy than currently planned and ORP could be expected to reprioritize other work scope to provide the necessary budget.
Production Ops	242AE-0043-R	Failure of the fire safety system	DOE-ORP/WRPS	The current fire safety system is old and in need of consistent maintenance. WRPS is responsible for routine maintenance and component replacements. ORP is responsible for replacement of the system.
Production Ops	242AE-0045-O	Relocation of the air supply control valves leads to increased safety and eliminates need to dump the vessel due to air flow control adjustments	DOE-ORP/WRPS	Currently the air supply control valves are located in an area that requires the vessel to be dumped in order for the valves to be operated. An opportunity exists for the control valves to be moved. An opportunity exists if the air supply control valves are relocated to an area that does not require the vessel to be dumped in order to be operated eliminating the cost and schedule impacts associated with vessel content dumping.
Production Ops	242AE-0046-R	Condenser Room Roof Damage	DOE-ORP/WRPS	A risk exists that damage to the condenser room roof causes a replacement to be required. WRPS is responsible for minor roof repairs. ORP is responsible for a complete roof replacement.
Production Ops	242AE-0051-R	AW Vacuum Pump Failure	DOE-ORP/WRPS	Active ventilation in AW Farm is required for evaporator campaigns. A risk exists that AW vacuum pumps fail and the ventilation system is shutdown. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible for system replacements.
Production Ops	242AE-0052-R	Differing Stakeholder Upgrade Priorities	DOE-ORP/WRPS	Upgrades to the evaporator can be prioritized by a variety of stakeholders (e.g.: WRPS, DOE ORP, DNFSB). A risk exists that differing stakeholder priorities change the upgrades schedule. WRPS is responsible for replanning and impacts when the priority changes are driven by WRPS. ORP is responsible for replanning and associated impacts when these changes are not driven by WRPS.
Production Ops	WASTE-0008-R	Deferred Lines have Waste/Water Causing Corrosion	DOE ORP	The deferred backup lines have not had continual testing for leaks or breakdowns in the piping. Using these lines to avoid leaks in the other piping lines could result in a spill of waste.
Production Ops	WASTE-0010-R	Unable to Pump Waste from Leak Detection Pit	DOE ORP	A risk exists that we may not be able to pump the waste out of the leak detection pit resulting in possible environmental noncompliance and fines.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	WASTE-0011-R	Tank/Infrastructure Failures Prohibit Waste Transfers from DSTs in West area	DOE ORP	The cross site transfer lines are not maintained. Most equipment has been taken out of service, returning equipment to service will be a lengthy process. Cross site transfer equipment has been stagnant since 2006. Cross Site Transfer lines may not be available when needed. The 241-SY Tank Farm recently had new complaint Safety-Significant waste transfer lines installed to support future waste transfer operations. However, significant work remains before transfers into or out of this Tank Farm can take place (e.g. jumper installations, Cross-sit transfer line, HIHTL or new piping that allows SY-101 pumping, overpressure documents). A risk exists that a leak in a West Area DST would result in the need to transfer waste to an East Area DST which would only be possible using a tank truck delaying planned work.
Production Ops	WASTE-0013-O	AN flush system	DOE ORP	An opportunity exists to install a flush system in AN Farm eliminating a single point failure in the flush system ensuring the capability to flush lines to eliminate residual waste.
Production Ops	WASTE-0015-R	Transfers thru AY01A (everything that goes to AY01A goes through AY02A) leave waste in AY02A Pit jumper (dead leg) (Environmental)	DOE ORP	A risk exists that you will not be able to pump AY-101 without possibly transferring waste back into tank AY-102 unless changes are made in AY02A.
Production Ops	WASTE-0016-R	Not having Spares When Needed	DOE-ORP/WRPS	Appropriate spares planning and management is the responsibility of WRPS. Factors (some outside of the control of WRPS such as funding) may impact the ability to maintain and have available critical spares when needed. A risk exists that if critical spares are not available when needed and waste transfers cannot take place. WRPS is responsible for identifying critical spares and procurement of an initial set of spares. ORP is responsible for additional critical spare part procurements.
Production Ops	WASTE-0019-R	AP flush system failure	DOE ORP	The AP Flush System is the only flush system for waste transfers in the Tank Farms Complex. A risk exists that a failure of the AP flush system occurs resulting in the inability to execute planned waste transfers until remedied.
Production Ops	WASTE-0023-O	Permanently isolate SL-164 in AW Farm	WRPS	An opportunity exists that SL-164 can be isolated permanently avoiding accidental transfer into SL-164.
Production Ops	WASTE-0025-R	SL-164 Failure Causes Delays (potential environmental)	DOE ORP	A risk exists that SL-164 failure causes environmental noncompliance resulting in fines and delays to planned waste transfers.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	ETFOP-0013-R	RO Valves and/or Pumps Failure During Operations	DOE-ORP/WRPS	System valves and pumps have under gone operability testing. A risk exists that the RO valves and/or pumps fail during operations halting ETF operations until remedied. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0025-R	Significant Equipment Failure	DOE-ORP/WRPS	ETF is an aging facility that requires constant preventative maintenance in order to stay in operation. Failure of major facility equipment is a risk that can halt ETF operations. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0026-R	Significant Failure of the Caustic Tank	DOE-ORP/WRPS	A leak has been noticed in the caustic tank. A risk exists that the leak grows in size that can halt ETF operations. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0027-R	Cooling Tower and Pump Failure	DOE-ORP/WRPS	Current repair efforts have exhausted all but the last recommended maintenance activity to repair leaks in the cooling tower. A risk exists that the cooling tower and/or the pump fails that can halt ETF operations. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0029-R	Thin Film Dryer System Failure (DOE owned)	DOE ORP	Boiler and heat exchanger failure can occur within the thin film dryer system and can halt ETF operations.
Production Ops	ETFOP-0031-R	Thin Film Dryer System Failure (WRPS owned)	WRPS	A risk exists that primary valve, pumps, blowers, drum handle, and cameras fail resulting in a halt to ETF operations until remedied.
Production Ops	ETFOP-0035-R	Lack of Critical Spares	DOE-ORP/WRPS	A risk exists that critical spares are not available when needed resulting in the unplanned shutdown of ETF. Appropriate spares planning and management is the responsibility of WRPS. Factors (some outside of the control of WRPS such as funding) may be impact the ability to maintain and have available critical spares when needed.
Production Ops	ETFOP-0036-R	Adverse Weather Conditions (more extreme than anticipated)	DOE-ORP/WRPS	The Hanford Site can be subject to various different types of weather conditions from ice in the winter, high winds all year around, or smoke due to fires in the area or on the site. A risk exists that inclement weather causes unplanned work stoppages and site closures causing delays and budget impacts. WRPS is responsible for reasonable weather impacts (at most 4 days combined of site closures) and ORP is responsible for any delays beyond (extreme weather impacts).

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	ETFOP-0039-R	ETF Evaporator or Valve Failure	DOE-ORP/WRPS	A risk exists that the ETF Evaporator or attached valves fail and cannot be repaired without major system replacement. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0040-R	ETF Verification Tank Coating Degradation	DOE-ORP/WRPS	A risk exists that ETF tank coating verification identifies damage requiring repair is identified by the integrity assessment. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0041-R	ETF Peroxide Decomposer Vessel Failure	WRPS	The vessel currently leaks. A risk exists that the vessel fails halting ETF operations until remedied.
Production Ops	ETFOP-0042-R	ETF Chiller Failure	DOE-ORP/WRPS	The chiller cannot be replaced like for like. A risk exists that the chiller fails and shutdown ETF operations until remedied. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0043-R	ETF Secondary Waste Receiving Tank Failure	DOE ORP	Minor damage was identified by the recent integrity assessment. A risk exists that further damage may occur requiring replacement of the ETF Secondary Waste Receiving Tank.
Production Ops	ETFOP-0044-R	ETF Air Compressor/Dryer System Failure	WRPS	A risk exists that the compressor and/or dryer system fail leading to replacement.
Production Ops	ETFOP-0045-R	ETF Chemical System Piping/Tank Failure	DOE ORP	A risk exists that the chemical system piping/tank fails leading to replacement.
Production Ops	ETFOP-0047-R	LERF Leachate Level and pumping system failure	DOE-ORP/WRPS	The Basin 43 system has failed. A risk exists that the other two systems fail halting LERF operations. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0048-R	ETF Concentrate Tank Failure	DOE ORP	Repair damage was identified by the recent integrity assessment. A risk exists that the damage to the ETF concentrate tank worsens leading to failure and the shutdown of ETF operations.
Production Ops	ETFOP-0051-R	TEDF Pump Station 2 Generator Failure	WRPS	A risk exists that the TEDF pump station 2 generator fails cutting power to the pump station stopping transfers within ETF.
Production Ops	ETFOP-0054-O	ETF Uninterrupted Power Supply	DOE-ORP/WRPS	An opportunity exists to add an uninterrupted power supply to ETF to supply the MCS and other key components to reduce unplanned shutdowns.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	222SL-0001-R	222-S Facility Equipment Failure	DOE-ORP/WRPS	Currently the age of the 222-S Lab Facility is approx. 65 + years old. Upgrades have occurred and continue to occur with the life extension plan. A Risk exists that specific equipment now being utilized can fail. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible for system replacements.
Production Ops	222SL-0002-R	Spare Parts Not Available for Plant Equipment Maintenance	WRPS	Inventories of spare parts are crucial to maintain the integrity of operations when equipment breaks down or needs repair. A risk exists that spare parts are not available when needed delaying 222-S lab operations.
Production Ops	222SL-0005-R	222 Cold Lab is Late Coming On-line	DOE ORP	A risk exists that if the funding requests and approvals do not happen in a timely manner, the operational capabilities of the 222-S Lab will be impacted in terms of its capabilities to perform analysis.
Production Ops	222SL-0016-R	Sub-contractors and Other Hanford Site Contractors Do Not Perform As Required	DOE-ORP/WRPS	Sub-contractors and other prime contractors are utilized for a number of functions and support roles throughout. (PFP) A risk exists that poor performance of other Hanford subcontractors results in delays to WRPS planned work execution. WRPS is responsible for WRPS subcontractor work execution delays and ORP is responsible for other Hanford site contractor work execution delays.
Production Ops	222SL-0018-R	As Found Field Conditions Differ from Expected (Materials & Radiological, Hazardous Materials and Electrical)	DOE-ORP/WRPS	The 222-S Laboratory is an aging facility. During normal operations, circumstances can arise where conditions encountered are not what is expected. A risk exists that the as found field conditions are different from expected from either a materials (including hazardous materials) or a radiological perspective and project rework is required. Currently upgrades have a planned Scope of Work, with most existing conditions known and planned for. WRPS is responsible for minor differing as found field conditions. ORP is responsible in cases requiring considerable expenditure of resources due to unforeseen conditions.
Production Ops	222SL-0025-R	Testing Identifies Design/Construction Issues	DOE-ORP/WRPS	Testing is performed at the conclusion of 222-S Laboratory Upgrade work, prior to turnover to operations. A risk exists that testing identifies items requiring rework and testing. WRPS is responsible to correct deficiencies noted during acceptance testing and ORP is responsible to correct deficiencies identified during operational testing.
Production Ops	222SL-0031-R	202-S, PFP remediation, or other Hanford contractor facilities activities may Hinder Lab Work/Priorities	DOE ORP	Remediation of 202-S and the PFP are planned to continue. Ventilation inlets to 222-S are in proximity to 202-S. 202-S and PFP have been abandoned for some time. A risk exists that other Hanford site contractors working at 202-S or PFP cause unanticipated work stoppages at the lab.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	222SL-0033-R	Failure to maintain fire safety system	DOE-ORP/WRPS	Currently the fire suppression, alarm, and detection system is needing constant repair. A risk exists that failure of the fire alarm system will occur interrupting lab operations until the system can be repaired/replaced. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible for system replacements.
Retrievals	AAXRC-0003-R	Lack of Backup Box for Removal of Long Length Equipment	WRPS	Long length equipment will be removed from the tanks as part of demolition and removal prior to retrievals. A risk exists that backup boxes are unavailable resulting in failed pump and other long length equipment removal delays.
Retrievals	AAXRC-0004-R	Insufficient DST Availability	DOE ORP	DST space is needed to perform SST retrievals in A and AX farms. The A/AX farm tanks contain salt waste which requires greater volumes of water to retrieve than sludge tanks. A risk exists that DST space will be exhausted halting waste retrieval activities until sufficient space can be made available.
Retrievals	AAXRC-0006-R	Safety Stand down on Site Results in Extended Work Stoppage (e.g., Crane accident). Excludes external events or new customer requirements.	DOE ORP	Work conducted on the Hanford site is always done with safety as a top priority. All hazards cannot be effectively eliminated. WRPS adheres to DOE guidelines and orders regarding personnel safety. A risk still exists that hazards can cause extended stop works.
Retrievals	AAXRC-0009-R	Adverse Weather Conditions (more extreme than anticipated)	DOE-ORP/WRPS	The Hanford Site can be subject to various different types of weather conditions from ice in the winter, high winds all year around, or smoke due to fires in the area or on the site. A risk exists that inclement weather causes unplanned work stoppages and site closures causing delays and budget impacts. WRPS is responsible for reasonable weather impacts (at most 4 days combined of site closures) and ORP is responsible for any delays beyond (extreme weather impacts).
Retrievals	AAXRC-0013-R	Ventilation Upset Conditions in A/AX	DOE-ORP/WRPS	The ventilation systems within A and AX farm are aging systems, likely non operational. Even though current plans call for deployment of new dedicated exhausters for A and AX farm, a risk exists that ventilation system upsets halt waste retrieval operations until they are remedied. WRPS is responsible for maintenance and simple repairs and ORP is responsible for major repairs/replacement.
Retrievals	AAXRC-0017-R	Environmental Permits Approvals Not Received in Time	DOE ORP	In order to begin retrieval work on A/AX Farms environmental permits must first be acquired because of the removal and transfer of hazardous waste that must occur. A risk exists that environmental permit delays impacts the planned start of waste retrieval.

Program	Risk ID	Title	Owner/ Organization	Description
Retrievals	AAXRC-0019-R	Complex Integration of Field Work	WRPS	A/AX retrieval must integrate and share resources and equipment with various other projects and operational activities ongoing throughout WRPS. A risk exists that due to the complex nature of waste disturbing activities and other equipment removal/equipment installations and other cleanup activities, resources may not always be available to support planned work execution..
Retrievals	AAXRC-0024-R	Waste Temperatures Exceed HIH Limits	DOE ORP	A Farm is known to contain high heat waste. A risk exists that the waste in A and/or AX tanks exceeds HIH limits resulting in the need to take actions to reduce tank waste temperature.
Retrievals	AAXRC-0029-R	Cannot Remove Waste from ALC Internals	DOE ORP	Some waste has accumulated within the Air Lift Circulator pipes. A risk exists that removal of this waste may not be possible with the current equipment.
Retrievals	AAXRC-0032-R	Failure to Identify Long Lead Procurements	WRPS	Certain procurement activities can or will take an extended amount of time to accomplish especially with the customized nature of waste retrieval. Risk addresses those items that are foreseeable and within WRPS' control. A risk exists that the need for certain items to be procured early due to their associated extended fabrication lead times are not identified and consequently arrive late causing construction delays.
Retrievals	AAXRC-0034-R	Vendor Unable to Deliver Equipment to Meet WRPS Needs	WRPS	Tank retrieval operations require customized equipment due to both the unique infrastructure of Hanford and the unique make up of the waste. This risk addresses supply chain issues which should have been foreseeable and preventable by the contractor. A risk exists that vendors are not able to meet WRPS equipment delivery dates causing construction delays.
Retrievals	AAXRC-0037-R	Unanticipated dome load restrictions prevent construction activities	DOE ORP	Dome load calculations will be performed prior to placement of any equipment in or around tanks. A risk exists that unanticipated dome load restrictions limit the choice of waste retrieval methods and compromises the likelihood of successfully meeting tank waste retrieval goals.
Retrievals	AAXRC-0038-R	Loss of Utilities (raw water, etc.)	DOE ORP	In order to execute tank farms retrievals both water and electricity must be in constant supply. A risk exists that one or more utilities are lost halting waste retrieval operations.
Retrievals	AAXRC-0042-R	Inadequate Freeze Protection	WRPS	The days during the winter months in the Columbia Basin can frequently drop below freezing temperatures. A risk exists that installed freeze protection is not able to provide sufficient heat to allow waste retrieval activities to proceed in colder weather.

Program	Risk ID	Title	Owner/ Organization	Description
Retrievals	AAXRC-0049-R	Old Spill Sites Exposed During Excavation	DOE ORP	Excavation will be required within A/AX Farms during the common upgrades activities as well as during individual tank preparations. There is known history of extensive spill sites throughout the A and AX tank farms. Known spill sites are mapped and will be avoided to the maximum extent practical. A risk exists that previously undiscovered old spill sites may be discovered during planned excavation activities resulting in the need to stop work and implement more stringent safety and environmental controls.
Retrievals	AAXRC-0051-R	Damage to Tank/Equipment During Equipment Installation or Removal	WRPS	In order to retrieve from each tank certain equipment must be installed. The process of installing this equipment could do damage to either the tank, other equipment, or the equipment being installed. Removal of equipment has similar risks. This risk assumes that a primary cause of damage was not degraded or failing existing infrastructure.
Retrievals	AAXRC-0057-R	No Waste Stream Path Identified for Removed Equipment	DOE ORP	After hazardous equipment is removed or decommissioned from Hanford it must be properly disposed of. A risk exists that there may not always be an accepted disposition pathway for all removed equipment introducing delays as new alternate disposition methods are developed and implemented.
Retrievals	AAXRC-0061-R	Procurements are Delayed or do not Meet QA Requirements	WRPS	In order to use the equipment procured for retrieval it must first pass QA Requirements and must be on site when needed. A risk exists that procurements are delayed or do not meet QA Requirements. Risk addresses those items that foreseeable and within WRPS' control.
Retrievals	AAXRC-0063-R	222-S Lab Unable to Meet Sampling Demands	WRPS	The 222-S Lab is operated by a separate DOE contractor. A risk exists that sampling delays occur due to increased sampling needs, unexpected failure of lab analysis equipment, etc. resulting in unplanned work delays.
Retrievals	AAXRC-0066-R	SST Pits Must be Made RCRA Compliant	DOE ORP	SST pits are not considered part of RCRA currently. A risk exists that SST pits must become RCRA compliant resulting in the need to take unplanned actions to remedy noncompliance.
Retrievals	AAXRC-0084-R	TWRWP Approval Not Received as Expected	DOE ORP	In order to accomplish the retrieval work TWRWP must approve the planned work. A risk exists that the TWRWP will not be approved when needed causing delays to waste retrieval operations.
Tank Farm Program	TFPRO-0009-R	Cranes Not Available When Required	DOE-ORP/WRPS	Cranes are required to support various Retrievals activities. WRPS obtains all cranes from MSA for use. Cranes and/or crane operators/rigging crews are not available when required. WRPS is responsible to identify crane needs and integrate crane operations into their planned work. ORP is responsible to ensure cranes are available when needed to support WRPS planned work.

Program	Risk ID	Title	Owner/ Organization	Description
Tank Farm Program	TFPRO-0010-R	Lack of Control of Consumable Materials	WRPS	Consumable materials (lights, cameras, etc.) are obtained by specific TFP activities as part of their individual work scope. Once obtained these goods are input into the existing system and can be used for other purposes as needed. A risk exists that consumable materials are not available when needed.
Tank Farm Program	TFPRO-0011-R	Inadequate Control of Stored Equipment (Damaged/ Lost/ Reallocated)	WRPS	Equipment (non-consumable) purchased by TFP activities for use is stored in a centralized location. This risk addresses equipment and stored by WRPS. A risk exists that equipment cannot be tracked or properly maintained.
Tank Farm Program	TFPRO-0012-R	Plant Force Work Reviews (PFWR) Awards More Field Work to Plant Forces Than Planned	WRPS	As part of work planning PFWRs are conducted to evaluate if work is to be performed by base operations maintenance staff or construction staff. The two groups maintain similar skill sets but are used for different activities. A risk exists that delays occur due to discrepancies in RFWR and construction resource allocation.
Tank Farm Program	TFPRO-0013-R	Commercial Grade Dedication Requirements are not met as Expected	WRPS	A risk exists that commercial grade dedication requirements are more complex than anticipated causing delays.
Tank Farm Program	TFPRO-0014-R	Tank Farm Power is Not Available As Required	DOE-ORP/WRPS	Tank Farm power is required to support various TFP activities. A risk exists that power is not available when required. WRPS is responsible for maintenance when required to keep consistent power availability. ORP is responsible for major power delays and upgrades needed to maintain sufficient power.
Tank Farm Program	TFPRO-0017-R	Insufficient Training Prior To Turnover	WRPS	Implementation of new systems/procedures within the Tank Farms requires retraining of operations personnel. A risk exists that projects/programs are delayed due lack of training for new members joining project team or next phase of workscope.
Tank Farm Program	TFPRO-0019-R	Production Operations Unable to Provide Lock and Tags as Required	WRPS	Lockouts and Tag outs of key systems are required for TFP work. Production Operations is responsible for the lock and tag program. A risk exists that projects are delayed due to availability of key resources to perform lockout/tag out and access to areas that need lockout/tag out.
Production Ops	242AE-0008-R	PB-2 Failure	DOE-ORP	PB-2 Reliability is .882 according to the RPP-RPT-49610, Rev 0, Reliability Assessment of the 242-A Evaporator at the Hanford Tank Farms. ORP will fund the replacement jumper and pump installation. A risk exists that feed pump failure will halt Evaporator campaigns or delay planned Evaporator campaigns.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	242AE-0010-R	Failure of Compressed Air System (both redundant systems)	DOE-ORP/WRPS	The system provides compressed air at the required pressure to meet load demands of the process and instrument air systems in the evaporator. Some of the loads that are served by the system include air for pressurization of the reboiler after a loss of steam, numerous air operated valves and pneumatic instruments, dip tubes in the evaporator vessel and process condensate tank and purge air for the encasement on the P-C-5000 transfer line. Cat tested in 2009 approx. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible to fund installation in the event the entire system is replaced. A risk exists that failure of the compressed air system will interrupt Evaporator operations and may delay any planned Evaporator campaigns.
Production Ops	242AE-0013-R	Upgraded Instrumentation System Failure	DOE ORP	The 242-A Evaporator requires critical instruments to be replaced/upgraded. These instruments are at the end of their life cycle. A risk exists that instrumentation system failure can occur resulting in a halt to Evaporator operations and possible delays to planned Evaporator campaigns.
Production Ops	242AE-0015-R	PH/Conductivity monitoring fails	WRPS	During collection, the steam condensate is continually monitored for excessive radiation, out-of tolerance pH and conductivity values as prescribed by Treated Effluent Disposal Facility (TEDF). A risk exists that if PH/conductivity monitoring fails transfers to TEDF will be halted until PH/conductivity monitoring is repaired or replaced.
Production Ops	242AE-0026-R	Increasing Solids Level in Feed Tank (AW-102 or AW-106)	WRPS	Currently, solids build up in AW-102 or AW-106 on an on-going basis results in the need to make other tank space available or necessitates more ECs. Solids are returned to TF after Evaporator Process. A risk exists that solids buildup in AW-102 or AW-106 results in the need to make other tank space available delaying Evaporator operations or planned Evaporator campaigns.
Production Ops	242AE-0032-R	Process Condensate Leak Detection System Failure	WRPS	Currently the PC-5000 leak detection system is installed on the 242-A Evaporator Facility process condensate drain line. The condensate drain line extends between the 242-A evaporator and the Liquid Effluent Retention Facility (LERF) in the 200 East area of the Hanford site. A risk exists that a failure of line PC-500 occurs and results in shutdown of the Evaporator or introduces a delay in planned Evaporator campaigns.
Production Ops	242AE-0048-R	Vapors Stop Work During Start up or During an Evaporator Campaign	DOE ORP	Vapors events have the ability to delay evaporator campaigns. A risk exists that vapors stop works delay evaporator campaigns.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	WASTE-0003-R	In-Pit components do not Drain Properly Causing Freeze Issues and Schedule Delays (Jumper)	DOE ORP	In Pit equipment can be exposed to temperatures below freezing. A risk exists that equipment is clogged due to freezing resulting in a halt to waste transfers.
Production Ops	WASTE-0004-R	In-Pit components do not Drain Properly Causing Freeze Issues and Schedule Delays (Pump)	DOE ORP	In Pit equipment can be exposed to temperatures below freezing. A risk exists that equipment is clogged due to freezing resulting in a halt to waste transfers.
Production Ops	WASTE-0006-R	Replacement 241 AW/ AP slurry distributor causes safety concerns and/or the monometer effect (TSR violations)	WRPS	A risk exists that having a lose connector when you think its tight or a loose wrench handle can result in a leak and the need to stop the transfer of waste until remedied.
Production Ops	WASTE-0007-R	Deferred lines have Waste/Water causing Environmental Non Compliance.	DOE ORP	A risk exists that any waste or water in these lines would be a non-compliance (based on 164 failure, or additional visibility) and result in fines.
Production Ops	WASTE-0020-R	Adverse Weather Conditions (more extreme than anticipated)	DOE-ORP/WRPS	The Hanford Site can be subject to various different types of weather conditions from ice in the winter, high winds all year around, or smoke due to fires in the area or on the site. A risk exists that inclement weather causes unplanned work stoppages and site closures causing delays and budget impacts. WRPS is responsible for reasonable weather impacts (at most 4 days combined of site closures) and ORP is responsible for any delays beyond (extreme weather impacts).
Production Ops	WASTE-0024-R	Encasement Flammable Gas Build Up For Inactive Lines	DOE ORP	A risk exists that flammable gas builds up in inactive lines causing an explosion.
Production Ops	WASTE-0026-O	Redesign and Install of New AW-02A Jumper and/or pump	DOE-ORP/WRPS	The current design of the AW-102 Jumper sends all waste leaving AW-102 through 242-A. An opportunity exists to redesign the AW-102 Jumper and Pump bypassing the evaporator.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	ETFOP-0003-R	Excessive Liquid/Biota Accumulation on LERF Covers	WRPS	Liquid and biological residue are known to accumulate on the LERF basin covers. Currently operations staff manually removes the accumulation. A risk exists that excessive accumulation occurs and more clean up work is necessary resulting in delays to readiness activities.
Production Ops	ETFOP-0006-R	NDE Testing Identifies Unexpected Equipment Failures	DOE- ORP/WRPS	NDE testing will be performed on facility piping and other components as appropriate. A risk exists that NDE testing identifies potential equipment failures and requires curtailment of ETF operations until they can be remedied. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0028-R	LERF Pump Failures	DOE- ORP/WRPS	Pumps are used to drain the LERF Basins at the ETF Facility. Each LERF Basin has a pump devoted to that basin. Pump failure while a LERF Basin is being drained is a risk that can halt ETF operations. WRPS is responsible for maintenance and component repairs (less than \$250K and 3 months impact) and ORP is responsible for major system repairs (costs exceeding \$250K and schedule delays beyond 3 months).
Production Ops	ETFOP-0033-R	LERF Transfer Line Failure	DOE ORP	A risk exists that LERF Basin discharge piping and valves fail due to freezing resulting in the shutdown of transfers into LERF.
Production Ops	ETFOP-0034-R	LERF transfer lines/valves plugged	WRPS	A risk exists that LERF Basin discharge piping and valves fail due to freezing resulting in the shutdown of transfers into LERF.
Production Ops	ETFOP-0037-R	UV/OX Partial Failure	WRPS	The UV/OX system has a history of unexpected breakdowns. A risk exists that problems arise leading to minor repairs and minor delays.
Production Ops	ETFOP-0049-R	Ladders/Stairs Failure	DOE ORP/ WRPS	A risk exists that aging stairs and ladders fail and unanticipated repairs must be made. Make shared, WRPS owns the maintenance, but large replacements need to be ORP owned.
Production Ops	222SL-0011-R	Samples Placed in 222-S Archives by Other Hanford Contractors Defer Disposal Costs	DOE ORP	Currently there is nothing in the Tank Operations Contract specifically calling out whether WRPS can decide if OHC Samples can remain in archive. A risk exists that archive samples exceed planned quantities resulting in the need for a larger archive or requiring an increase to disposal cost.
Production Ops	222SL-0012-R	Sample Analysis Residue Waste Requires Disposal	DOE ORP	Currently the WRPS does not state that all waste generated during Sample Analysis is disposed of by WRPS. OHCs need to be responsible for these costs that are incurred for their Sample Analysis work. A risk exists that the cost to disposition residue waste exceeds planned inventories.

Program	Risk ID	Title	Owner/ Organization	Description
Production Ops	222SL-0014-R	Analytical Instrumentation is Received Late and/or faulty	WRPS	Currently, Instrumentation for analysis is procured in long lead, and for aging infrastructure needs, with float for manufacturing and procurement. A Risk exists that analytical instrumentation is received late and in faulty condition, and cannot be calibrated for use within the labs.
Production Ops	222SL-0019-R	Lack of Critical Resources	WRPS	A risk exists that a shortage of critical resources (people or equipment) results in the inability to execute planned work.
Production Ops	222SL-0027-R	Electric System Wiring, Lighting, and Shared Neutrals Reliability Cause Failures	DOE-ORP/WRPS	Some of the Electrical and Wiring Systems in the 222-S Laboratory are circa 1950's technology, with many inadequate components and sub-systems, combined with shared neutral wiring. A risk exists that the electrical system fails leading to extended lab shutdown until the failure can be remedied. WRPS is responsible for routine maintenance and individual component replacements. ORP is responsible for system replacements.